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Game Theory: The Modern-Day Airline Dogfight

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EASTERN KENTUCKY UNIVERSITY

Game Theory: The Modern-Day Airline Dogfight

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Abstract

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This study examines the narrowing differentiation between legacy airlines and low-cost carriers in the United States by exploring the competitive strategies each group borrows from one another. Specifically, this work examines the implementation of a new type of economy fare by Delta Air Lines, called basic economy, and evaluates how the fare has impacted a key metric of airline performance: domestic operating revenues.

In the first part of this thesis, an explanation of the history behind airline marketing efforts as well as what constitutes a low-cost carrier and a legacy carrier is provided. A brief description of game theory is included as well.

In the second part of this thesis, domestic operating revenues were gathered from the Bureau of Transport Statistics for each of the legacy carriers in the United States: Delta Air Lines, United Airlines, and American Airlines. Since only Delta had implemented a basic economy fare at the time of this research, Delta was used as the test variable while American Airlines and United Airlines were used as control variables. A regression was then performed on the data to analyze the significance of the results and account for seasonality.

The data indicated that there was a strong correlation between Delta Air Lines's growth in revenues and the introduction of its basic economy fare. Delta strongly outperformed

its legacy airline competitors in domestic operating revenue growth during this time period. Now, American and United are following Delta's lead and introducing their own versions of a basic economy class.

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Introduction

On October 24, 1978, President Jimmy Carter signed into law one of the most profound and influential pieces of legislation to affect the United States airline industry: The Airline Deregulation Act of 1978. Focusing on competition and economic liberalization, this law introduced several significant changes to the way the United States airline industry operated. Previously, fares and flights were regulated by a central bureaucracy known as the Civil Aeronautics Board. As Wensveen (2011) notes, "airlines had a monopoly on certain routes and passengers were forced to fly certain airlines regardless of price or desire" (p. 274). Furthermore, many airlines had to operate inefficient flights, resulting in higher fares for their passengers.

However, as the law began to take effect through the late 1970s and early 1980s, airlines received greater flexibility in that they could choose the routes they wanted to fly and file the fares that they deemed appropriate. Competition and the free market structure resulted in lower airfares and airlines entering markets in which they previously had limited or no access. Some carriers performed well during this time period and evolved into what is known today as the legacy (network) carriers. Other carriers did not perform so well, and many of these airlines were bought by or merged with stronger carriers. However, there were some new airlines that began to emerge, specifically in the low-cost carrier (LCC) market. These new carriers had lighter, less bureaucratic cost structures and began to compete with the legacy carriers for passengers, igniting fare wars and other competitive practices. Such competitive

strategies represent one of the key components of the complex system of airline economics.

The airline industry is an oligopoly, which is where a few firms offer either a similar or slightly differentiated product. Many economists have argued about the extent to which differentiation exists in the airline industry. Although nearly all experts in the industry would agree that an airline offers the same basic product (i.e., a safe, reliable seat to one's destination of choice), others argue that airlines are able to distinguish their products through the services they offer their passengers. For instance, carriers have added various amenities in an attempt to woo passengers, such as Wi-Fi, seatback entertainment, food options, lounges, frequent flier programs, various types of seating and levels of comfort, etc.

Indeed, airlines have had to change their marketing tactics throughout the decades, especially since deregulation. Airlines have now moved into the *consumer-oriented period* in which carriers have molded their "services to meet consumer needs rather than molding consumer needs to fit the available services" (Wensveen, 2011, p. 275). Before, airlines focused mainly on producing "services that reflected the operations and selling talents of the company" in what is known as the *sales-oriented period* (Wensveen, 2011, p. 275).

However, despite the efforts of airlines to differentiate the same basic product, most passengers still care primarily about one factor: price. Wensveen (2011) asserts that this focus is hardly surprising given the fact that airlines operate in "an industry

with relatively few companies [in which] each [is] aware of the other's pricing policies and [must] match the competition or lose market share (p. 282).

What are Low-Cost Carriers?

One group of airlines has focused on the price-centric strategy more so than others: low-cost carriers (LCCs). In the United States, low-cost carriers include airlines such as JetBlue, Allegiant Air, Frontier Airlines, and Spirit Airlines. Many of these carriers have employed strategies to make their base fares as low as possible. For instance, many new carriers have more economical and flexible operating structures and have pursued the strategy of "de-bundling" fares.

De-bundling fares involves making the base fare of an airline ticket as cheap as possible by removing all of the free amenities a passenger would normally get and letting passengers select for themselves what amenities they do and do not want. This strategy is also known as a-la-carte pricing. For example, many airlines in this group have very inexpensive base fares, but will charge for items and services (i.e., ancillaries) such as checked baggage, carry-on baggage, printing a boarding pass, assigned seating, priority boarding, drinks, food, etc. The success of this strategy is largely explained by O'Connell and Williams (2011), who state that "the profit margins from ancillaries are much higher than the commodity-based sale of airline seats, with estimates of gross profit margins up to 40 per cent" (p. 148). Moreover, they highlight how "innovation in today's airline industry has stemmed from the low-cost carrier business model" with one of its "pioneering developments [being] ancillary revenues" (O'Connell & Williams, 2011, p. 148).

What are Legacy Carriers?

The other group of airlines is known as legacy or network carriers. The major examples of legacy carriers in the United States are Delta Air Lines, American Airlines, and United Airlines. These carriers for a long time included many of the amenities the low-cost carriers charged for; however, this has changed in recent years. Faced with soaring fuel costs, an economic recession, and competition from low-cost carriers within the last decade, the legacy carriers have begun to borrow many strategies from the low-cost carriers in an attempt to boost market share and operating revenue. All of the legacy carriers now employ baggage fees for checked baggage and many are now charging for ancillaries such as priority boarding, snacks, and itinerary changes.

What is Game Theory?

Game theory is the framework that economics uses to understand how firms compete with one another. Game theory in economics works much like any sort of strategic recreational game, such as Monopoly®. As Frank and Bernanke (2009) write, the three basic elements of a game are "the players, the strategies available to each player, and the payoffs each player receives for each possible combination of strategies" (p.270). Similarly, in the airline industry, the three elements are the airlines, their competitive strategies, and the resulting revenues each airline receives from pursuing their strategies.

Some firms may have dominant strategies, or a strategy "that yields a higher payoff no matter what the other players in a game choose" (Frank & Bernanke, 2009, p. 271). Other times a business's plan is dependent on the actions of another firm. Factors

such as preferences, timing, and assumptions about what other firms may or may not do can also influence the actions a business will decide to take. More information regarding the strategy of the basic economy fare will be discussed near the conclusion of this paper.

Basic Economy and Delta Air Lines

Many legacy carriers still tend to have higher base fares than low-cost carriers (Ros, 2016). As a result, legacy airlines have started to enact increased seat segmentation. Rather than just the traditional first, business, and economy seating arrangements, carriers are now introducing classes between these levels, such as a basic economy or a premium economy class.

Delta Air Lines has pioneered the development of the basic economy fare among legacy carriers. This fare is cheaper and more restrictive than the traditional economy, or "Main Cabin," fare offered by Delta. (Delta Air Lines, n.d.). For example, passengers flying in this class may not upgrade, reserve an assigned seat, or change their itinerary (Delta Air Lines, n.d.). By having a lower base fare, Delta can attract more price-sensitive customers as well as compete for market share against the low-cost carriers. In fact, Delta promotes its basic economy fare as its "value-fare product for price-driven customers" (Delta Air Lines, n.d.) The basic economy fare is proving successful as legacy competitors to Delta, such as United and American, have recently announced the implementation of basic economy products on a selection of routes beginning in spring of 2017 (Mutzabaugh, 2017).

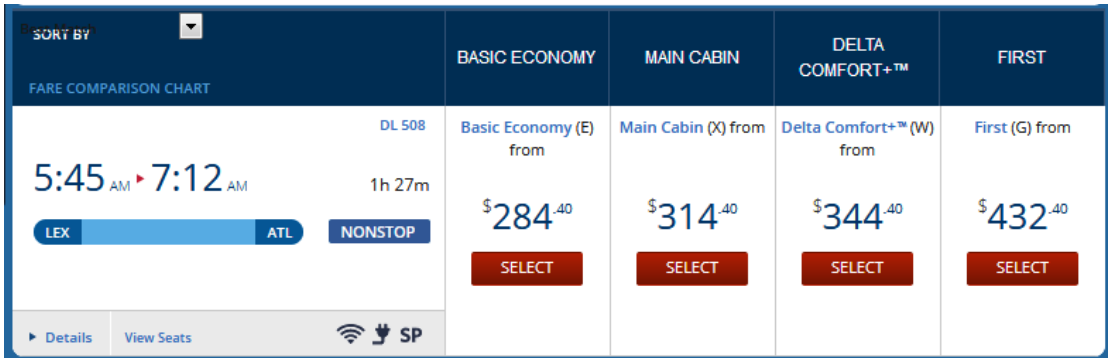


Figure 1: A screenshot from Delta's website showing fare segmentation from Lexington, KY to Atlanta, GA

Methodology

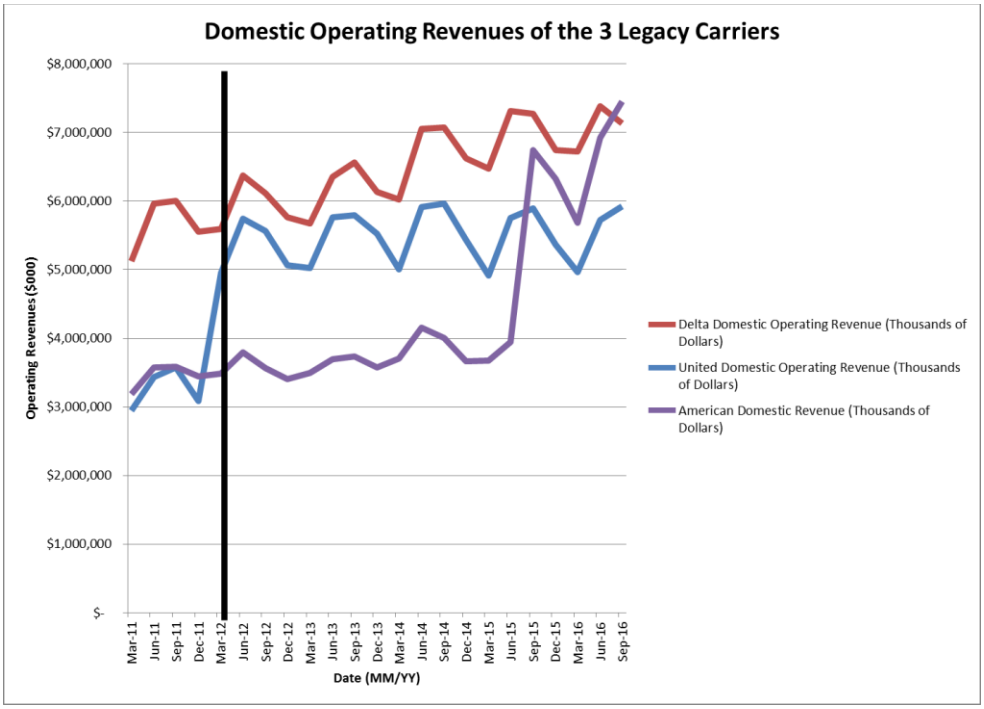
Given this recent development by other carriers, it is obvious qualitatively that Delta Air Lines must be having success with this new fare level. However, is the fare proving successful via quantitative measures? Using publicly available data from the Bureau of Transport Statistics (a division of the Department of Transportation), an analysis of operating revenues will be conducted to see if changes in the revenues are representative of the success of Delta's basic economy fare. The analysis will focus solely on domestic operating revenue data, as basic economy fares are primarily offered on domestic routes. Since Delta introduced the fare in March of 2012, years before the other legacy carriers in spring of 2017, it will serve as an ideal test variable whereas the other two legacy carriers (United and American) will serve as control variables. The three legacy carriers were also subject to similar macroeconomic conditions throughout this time period, making this analysis an ideal experiment. A regression analysis will be used to further explore the validity of the relationship between Delta's domestic operating revenues and the introduction of its basic economy fare.

Domestic Operating Revenues

Initial Data Findings

One of the best ways to evaluate a carrier's financial performance is through its operating revenues, which is the sales generated from a company's day-to-day activities. For an airline, this is the revenue it brings in from ticket sales, ancillary fees (e.g., baggage fees, food sales, priority boarding, etc.), and cargo on its flights. Therefore, the following analysis will determine if the advent of Delta's basic economy fare has had any effect, positive or negative, on Delta's domestic operating revenues.

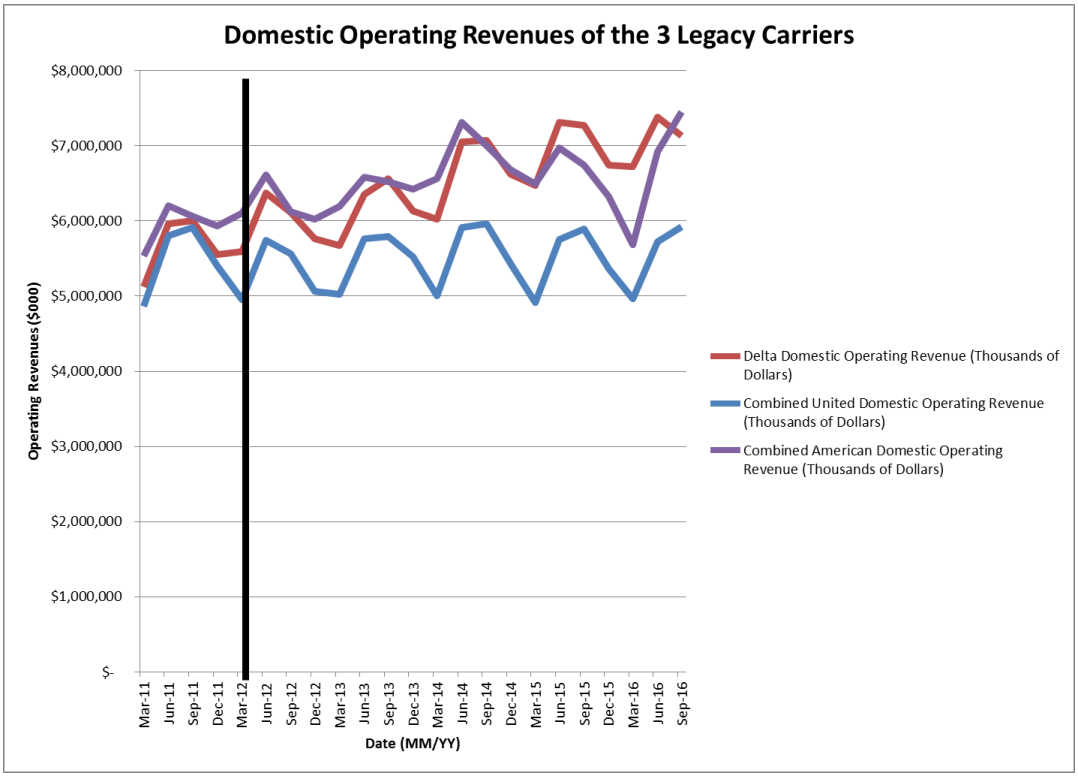
Using data from the Bureau of Transport Statistics (2016), data from the first quarter of 2011 through the third quarter of 2016 are displayed for Delta Air Lines, American Airlines, and United Airlines. Data are input into the graph based on the last month of each quarter.



Graph 1: Domestic Operating Revenues of Delta, American, and United from 2011Q1-2016Q3

Data Smoothing

However, with the above graph (*Graph 1*), there are several large spikes. United Airlines's operating revenues spikes around March of 2012, and American Airlines's operating revenue spikes around October of 2015. These points represent the times at which these carriers completed a merger with another carrier and/or started reporting jointly. United Airlines fully merged with Continental Airlines in March of 2012, and US Airways fully merged with American Airlines in April of 2015. Therefore, to help reduce this discrepancy in the data, data from Continental Airlines and US Airways were added to United Airlines and American Airlines *respectively* before they each completed their mergers. For example, US Airways's domestic operating revenue was combined with American Airlines's domestic operating revenue from the first quarter of 2011 to the second quarter of 2015. By the third quarter of 2015, both carriers were reporting their data together as American Airlines. The revised chart is displayed below in *Graph 2*. (The data table for the graphed domestic operating revenues is available in *Appendix 1*.)



Graph 2: Revised Domestic Operating Revenue Graph Incorporating Data from Airlines Pre-Merger

Statistical Analysis

Since the implementation of Delta's basic economy in March of 2012 (vertical black line in graphs), Delta's domestic operating revenues have continued to grow. Although the combined American domestic operating revenue exceeds Delta Air Lines's domestic operating revenue until June of 2015 (2015Q2), Delta's domestic operating revenue is consistently above the domestic operating revenue of the combined United Airlines. Unlike the combined United Airlines, whose trend is essentially flat, a clear growth can be observed in Delta's trendline.

It is important to focus on the time period following Delta's implementation of its basic economy fare in March of 2012 (2012Q2). A regression analysis was conducted

from the four-year period 2012Q2-2016Q2 using the statistical software EViews. The regression data and graphs are displayed below.

Graph 3: Delta Air Lines Regression Analysis 2012Q2-2016Q2

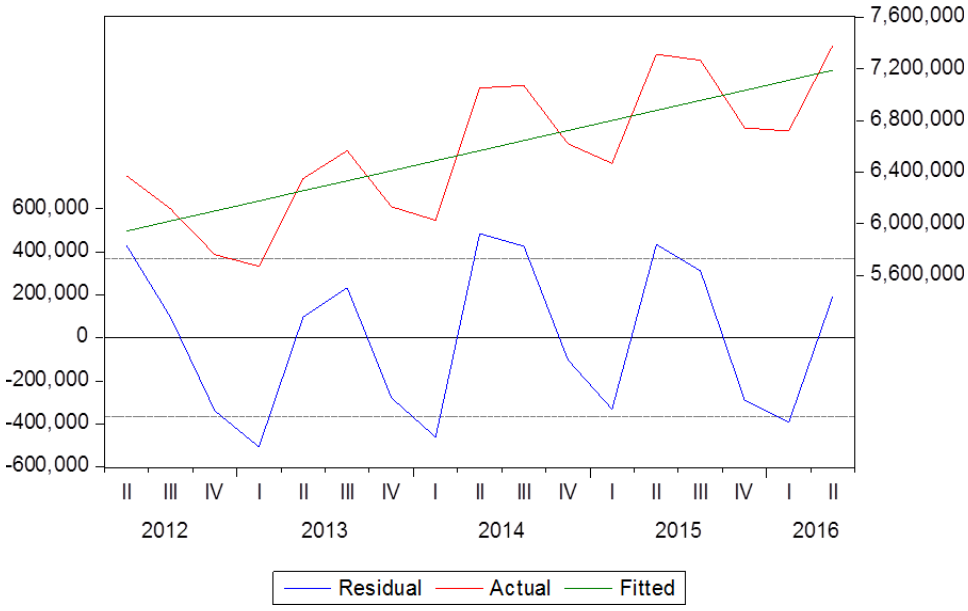


Table 1: Delta Air Lines Regression Analysis 2012Q2-2016Q2

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TIME	77934.84	18169.65	4.289286	0.0006
C	5476225.	269499.5	20.31998	0.0000

Graph 4: Combined American Airlines Regression Analysis 2012Q2-2016Q2

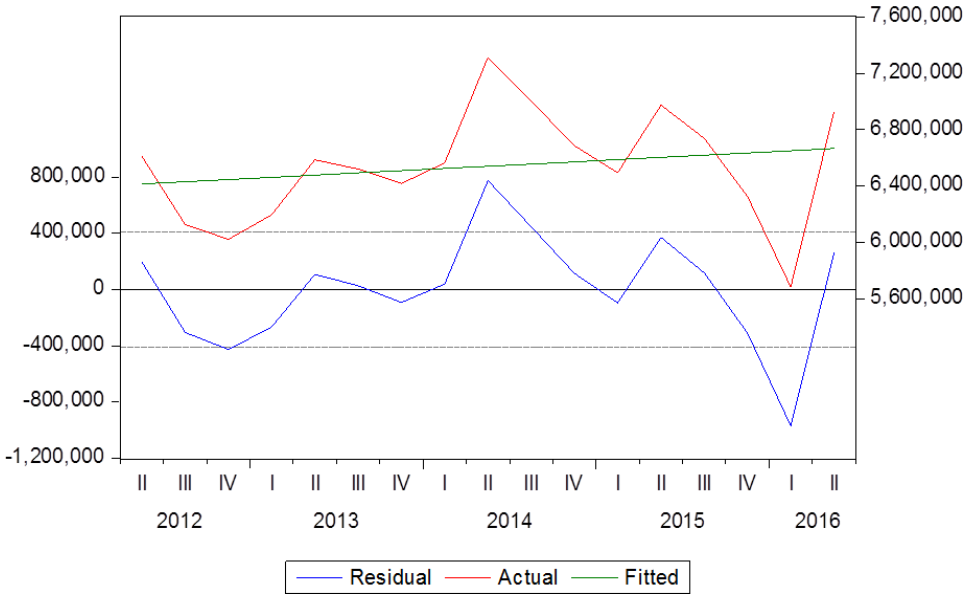


Table 2: Combined American Airlines Regression Analysis 2012Q2-2016Q2

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TIME	15738.51	20138.96	0.781496	0.4467
C	6320045.	298709.1	21.15786	0.0000

Graph 5: Combined United Airlines Regression Analysis 2012Q2-2016Q2

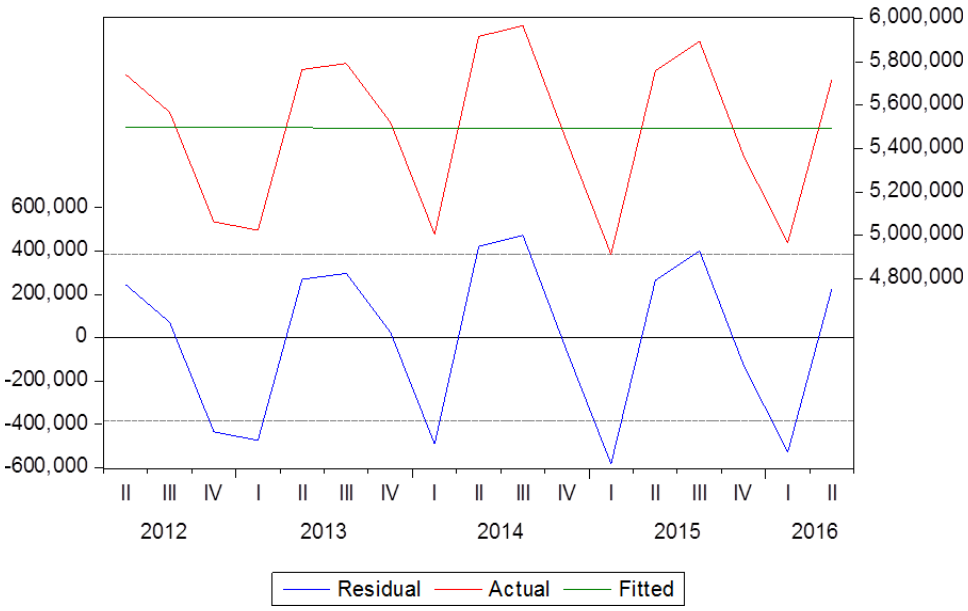


Table 3: Combined United Airlines Regression Analysis 2012Q2-2016Q2

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TIME	-241.1667	18956.79	-0.012722	0.9900
C	5497942.	281174.7	19.55348	0.0000

Statistical Analysis Conclusions

Although the R^2 values are *not* significant for the domestic operating revenues of the combined American Airlines (0.04) and combined United Airlines (0.00), the R^2 value for Delta's trendline variable *is* significant (0.55). Moreover, Delta's p-value is 0.0006, which means that the null hypothesis[1] should be rejected (since the p-value is less than 0.05) and that therefore this data is significant.

Delta's slope coefficient of $77,934,840 per quarter is also the highest of the three carriers as well, indicating that Delta had the most positive growth in this time period as opposed to the other network (legacy) carriers. The combined American Airlines had a modest growth rate per quarter whereas the performance of the combined United Airlines was essentially flat. Therefore, this analysis thus reveals that there is a significant correlation between Delta's domestic operating revenue and the implementation of its basic economy Fare.

Statistical Analysis – Seasonality

When looking at the trendlines displayed in the above graphs, the quarterly domestic operating revenues of the three legacy carriers are very seasonal. To adjust for this seasonal variation, quarterly seasonal dummies were added into the regression equation to determine the validity of the introduction of Delta's basic economy fare when factoring in seasonality. The seasonally-adjusted graphs are displayed below:

[1] In layman's terms, the null hypothesis represents the chance that a trendline is due to random chance/variables rather than a specific factor.

Graph 6: Delta Air Lines Seasonally-Adjusted Regression Analysis 2012Q2-2016Q2[2]

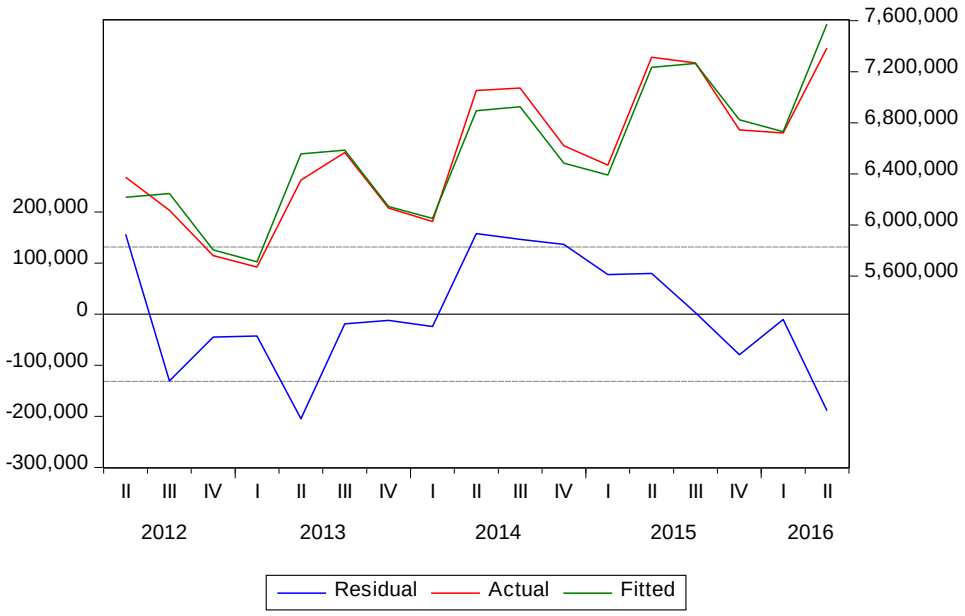


Table 4: Delta Air Lines Seasonally-Adjusted Regression Analysis 2012Q2-2016Q2

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TIME	84832.42	6576.816	12.89871	0.0000
SPRING	758385.3	88482.01	8.571068	0.0000
SUMMER	703553.3	93935.72	7.489732	0.0000
FALL	177949.9	93242.46	1.908465	0.0805
C	4949192.	118565.2	41.74236	0.0000

[2] **Note:** All graphs are in thousands of dollars. On the regression analyses, change in domestic operating revenues is on the left vertical axis, and the quarterly domestic operating revenues are on the right vertical axis.

Graph 7: American Airlines Seasonally-Adjusted Regression Analysis 2012Q2-2016Q2

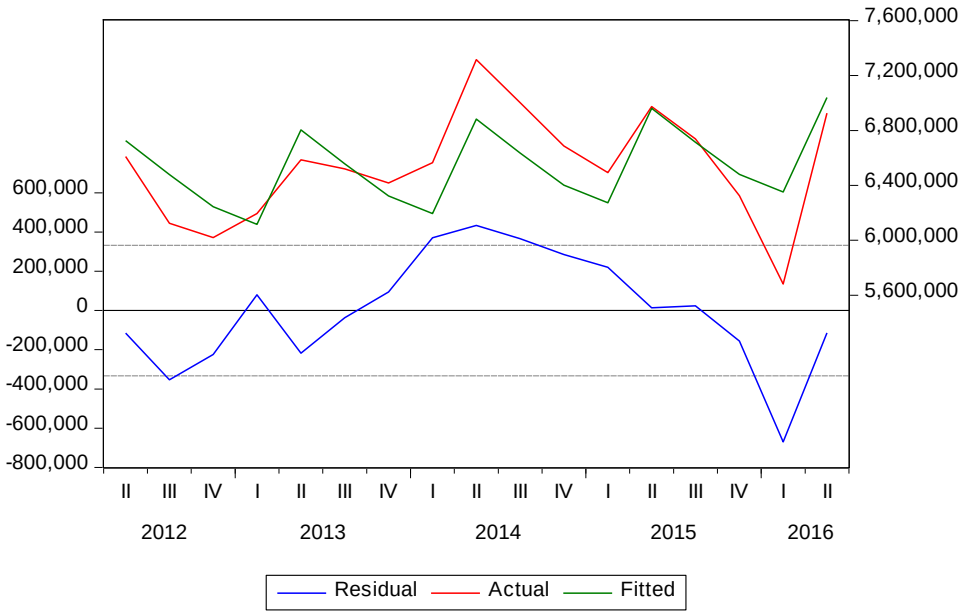


Table 5: American Airlines Seasonally-Adjusted Regression Analysis 2012Q2-2016Q2

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TIME	19680.50	16638.94	1.182798	0.2598
SPRING	668068.3	223854.1	2.984392	0.0114
SUMMER	402083.0	237651.6	1.691901	0.1164
FALL	148332.0	235897.7	0.628798	0.5413
C	5938857.	299962.8	19.79865	0.0000

Graph 8: United Airlines Seasonally-Adjusted Regression Analysis 2012Q2-2016Q2

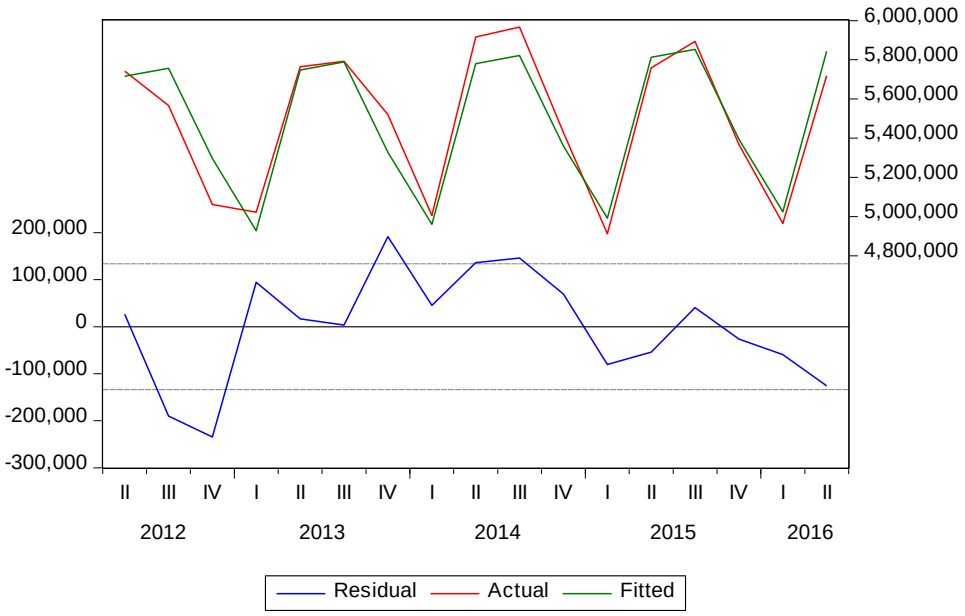


Table 6: United Airlines Seasonally-Adjusted Regression Analysis 2012Q2-2016Q2

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TIME	8042.865	6696.206	1.201108	0.2529
SPRING	812007.5	90088.24	9.013468	0.0000
SUMMER	844971.2	95640.95	8.834826	0.0000
FALL	376518.1	94935.11	3.966058	0.0019
C	4855731.	120717.6	40.22390	0.0000

The resulting data was very significant for Delta Air Lines as its p-value was barely above zero and therefore the null hypothesis can again be rejected. While the predictable seasonal trend is there, the seasonality and operating revenues are fairly independent of one another for Delta Air Lines as observed by its strong positive trend after the seasonal dummies were incorporated into the regression equation. Moreover, since Delta's trend is continuous, the data indicates that Delta's growth here is more than just a one-time shift. As seen from the tables above, the regression trend variable is not significant for either American Airlines or United Airlines.

Expansion of Data Range to Period before Implementation of Delta's Basic Economy

However, what if the data range were expanded to include the time before Delta Air Lines implemented its basic economy fare? A separate regression analysis was performed from the period 2011Q1 (approximately one year before) to 2016Q3 (end of available data at the time of this research) to see if carriers' results would differ markedly from the previous analysis (2012Q2-2016Q2).

Graph 9: Delta Air Lines Seasonally-Adjusted Regression Analysis 2011Q1-2016Q3

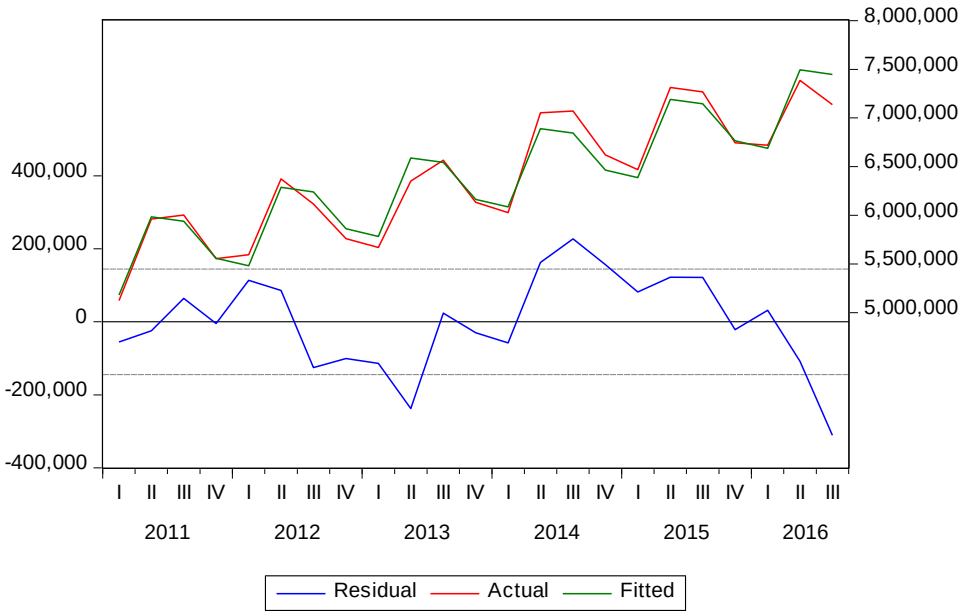


Table 7: Delta Air Lines Seasonally-Adjusted Regression Analysis 2011Q1-2016Q3

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TIME	75415.14	4574.558	16.48578	0.0000
SPRING	729600.5	83644.81	8.722604	0.0000
SUMMER	608475.9	84019.24	7.242101	0.0000
FALL	152906.6	87715.49	1.743211	0.0984
C	5104939.	77587.88	65.79557	0.0000

Graph 10: American Airlines Seasonally-Adjusted Regression Analysis 2011Q1-2016Q3

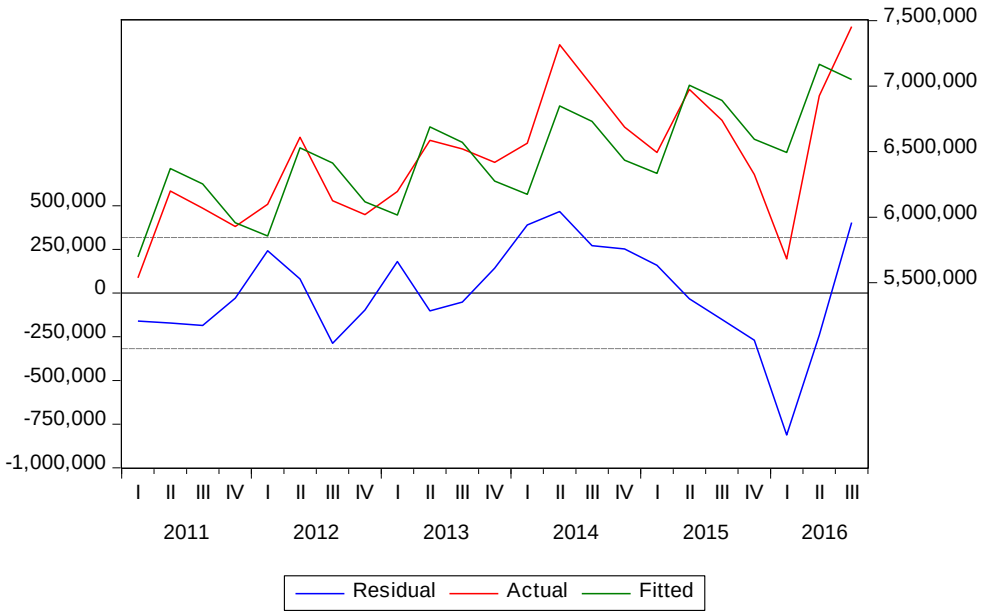


Table 8: American Airlines Seasonally-Adjusted Regression Analysis 2011Q1-2016Q3

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TIME	39821.83	10065.27	3.956359	0.0009
SPRING	633368.5	184041.3	3.441448	0.0029
SUMMER	476591.5	184865.2	2.578049	0.0190
FALL	140775.8	192997.9	0.729416	0.4751
C	5657288.	170714.4	33.13890	0.0000

Graph 11: United Airlines Seasonally-Adjusted Regression Analysis 2011Q1-2016Q3

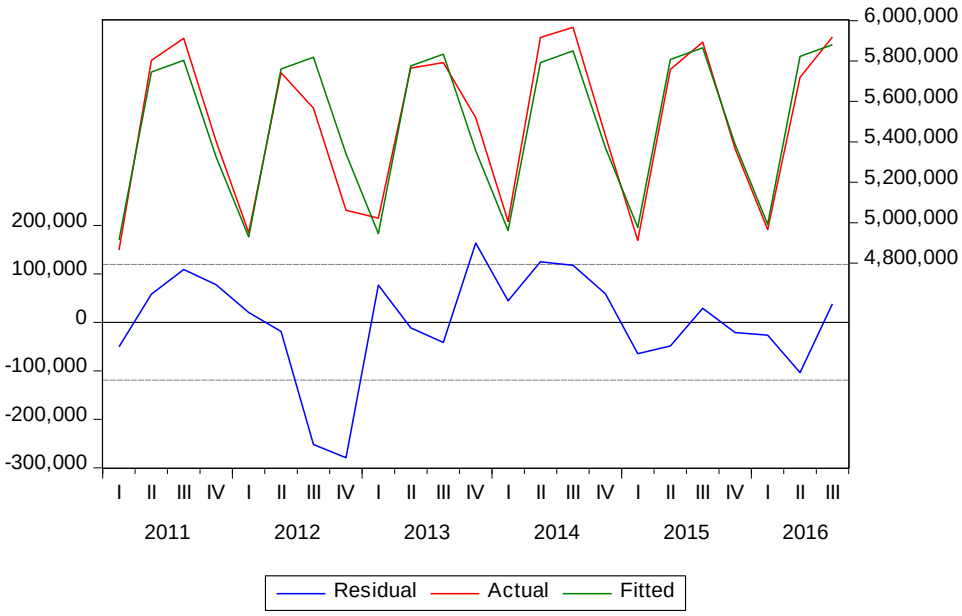


Table 9: United Airlines Seasonally-Adjusted Regression Analysis 2011Q1-2016Q3

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TIME	3858.410	3768.643	1.023819	0.3195
SPRING	826984.1	68908.82	12.00114	0.0000
SUMMER	880875.7	69217.29	12.72624	0.0000
FALL	399248.5	72262.36	5.524986	0.0000
C	4910950.	63918.97	76.83087	0.0000

As seen on the data table and graphs above, while both American Airlines and Delta Air Lines both have growth and statistical significance in their trend variables for this expanded period of time (2011Q1-2016Q3), United Airlines does not. However, as keeping with the previous analysis, Delta Air Lines's growth in domestic operating revenues still significantly outpaces the domestic operating revenues of American Airlines.

Insights Regarding the Implementation of Other Legacy Carriers' Basic Economy Fares

Thesis

Although it is not possible to prove causation, there is a strong correlation between the enactment of Delta Air Lines's basic economy in the second quarter of 2012 and the growth in its domestic operating revenues from that time until the second quarter of 2016. It is evident that this strategy is indeed working for Delta given its positive growth in domestic operating revenues, the airline's maintained use of the tactic, and the recent adoption of the fare by other legacy carriers in spring of 2017 (Mutzabaugh, 2017).

The Role of Game Theory

Given Delta's apparent success in deploying the basic economy fare, why have the other two legacy carriers waited so long to employ such a policy? Typically, airlines are very responsive when it comes to responding to price changes in the marketplace. When one carrier raises prices, another airline will follow the former's lead within a day

or even within a few hours, or if the other does not follow through, the first carrier will back off.

The delay of Delta's legacy airline competitors may have had to do with their organizational states at the time. In March of 2012, United Airlines had finally incorporated Continental Airlines into its operating structure as part of the carriers' planned merger in 2010 (Elliott, 2012). Similarly, in February of 2013, American Airlines and US Airways announced that they would also merge; however, they were not fully integrated until April of 2015 (Karp, 2015).

Perhaps United Airlines and American Airlines were so preoccupied with resolving complications from their respective mergers (e.g., labor agreements, operating structures, polices, computer systems, etc.) that they had no time to focus on enacting new and untested strategies like a basic economy fare. Delta Air Lines then took advantage of their preoccupations to focus on enacting a new, profitable strategy that would set them ahead of their legacy competitors (i.e., first mover advantage).

Or, perhaps it may have been a simpler reason…perhaps American and United doubted that the strategy would work or that the amount of time, complexity, and effort involved to overhaul their pricing structure would not be feasible. Then, as a second mover, they would be able to respond by either offering "a product that [would] differ markedly from [the] existing product" or "mimic [an] existing product closely" (Frank & Bernanke, 2009, p. 285). One could therefore conclude that the basic economy fare strategy represents an economic game in which timing matters.

Now that both American Airlines and United Airlines are in more stable conditions, they likely feel more comfortable at deploying new strategies that compete with Delta's. However, it is important to reiterate that both American's and United's basic economy fares have only been employed on a select variety of routes, which may indicate some residual uncertainty surrounding the new tactic (Mutzabaugh, 2017).

Delta may still have the first mover advantage in this area and thus has more experience in knowing what modifications are necessary in order to ensure higher utilization and profit maximization. Since Delta's basic economy fares were implemented years ago, Delta also has the lead in market penetration in that more consumers are aware of Delta's basic economy offering than of American's and United's basic economy products. Delta has another advantage in that its basic economy fare is less restrictive than the basic economy products of United and American, which would consequently better appeal to customers looking the try the basic economy option.

It appears as though United and American have incorporated some elements of both of the aforementioned options that are available to second movers in pursuing a strategy. Both carriers mimicked Delta's basic economy fare and differentiated their product, but not markedly so. The main difference in the basic economy offerings of American and United is that they are more restrictive than Delta's (Creswell, 2017). Specifically, both carriers do not permit carry-on bags other than one personal item (Mutzabaugh, 2017).

Conclusion

Although there was a strong positive correlation between Delta Air Line's basic economy and its quarterly domestic operating revenue, there are still many more areas for research. The Bureau of Transport Statistics offers an extensive database of information about carriers' load factors, passenger numbers, net income, and airfares. It would be fascinating to evaluate the influence of tactics, such as Delta's basic economy fare, on these other dependent variables. For instance, is the growth of Delta's domestic operating revenues better explained by improved confidence and more passengers flying rather than the development of the basic economy fare?[3] Although some preliminary data gathering, graphing, and analysis were performed by the author, including such a heavy amount of data and research would surpass the scope of this paper.

Another interesting facet to analyze in airline game theory is the implementation of legacy carrier strategies by low-cost carriers (in contrast to legacy airlines borrowing tactics from low-cost carriers). For instance, JetBlue, a low-cost carrier based out of New York City, has adopted a premium business class product on a select number of transcontinental flights called *Mint* (JetBlue Airways, n.d.). *Mint* offers premium amenities such as lie-flat seats, expanded entertainment options, priority boarding and check-in lanes, quality refreshments and meals, and even a subsection of seats that are suites with their own door (JetBlue Airways, n.d.). Typically low-cost carriers appeal

[3] It is important to note that while passenger numbers are quick to find and are easily available, they are not the best source for evaluating the performance of an airline. For instance, passenger numbers are easily influenced by external factors such as seasonality and economic growth.

solely to the price-sensitive consumer and not to the business or high-end consumer, so legacy airline strategies adopted by low-cost carriers, such as JetBlue's Mint, merit study as well.

Figure 2: JetBlue's *Mint* Product (JetBlue Airways, n.d.)

Like always, the airline industry is in a constant state of change. Faced with high barriers to entry and intense competition in addition to being subject to an ever-changing economy, airlines must continue to find innovative ways to compete. Legacy airlines and low-cost carriers were once considered to occupy separate spheres; however, as each group of carriers borrows strategies from the other, the lines dividing the two groups of airlines become increasingly blurred. As these atypical tactics for each group prove themselves to be highly successful, expect to see newly borrowed

strategies as well as continued integration and less-defined segmentation between the different players in the airline travel industry.

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Appendix 1 – Domestic Operating Revenues

Table 10: Domestic Operating Revenues (Source: Bureau of Transport Statistics)

Month (Arranged by end of Quarter)	Delta Domestic Operating Revenue (Thousands of Dollars)	Combined United Domestic Operating Revenue (Thousands of Dollars)	Combined American Domestic Operating Revenue (Thousands of Dollars)
Mar-11	$ 5,124,733	$ 4,864,314	$ 5,536,452
Jun-11	$ 5,960,970	$ 5,803,717	$ 6,198,851
Sep-11	$ 6,003,561	$ 5,912,162	$ 6,068,264
Dec-11	$ 5,554,952	$ 5,403,100	$ 5,928,766
Mar-12	$ 5,595,586	$ 4,950,545	$ 6,099,260
Jun-12	$ 6,372,974	$ 5,742,548	$ 6,609,931
Sep-12	$ 6,116,001	$ 5,567,124	$ 6,124,921
Dec-12	$ 5,760,749	$ 5,062,162	$ 6,020,032
Mar-13	$ 5,669,954	$ 5,022,297	$ 6,195,561
Jun-13	$ 6,351,146	$ 5,764,923	$ 6,586,440
Sep-13	$ 6,566,795	$ 5,792,667	$ 6,520,724
Dec-13	$ 6,132,965	$ 5,520,085	$ 6,418,145
Mar-14	$ 6,027,647	$ 5,005,587	$ 6,565,098
Jun-14	$ 7,052,763	$ 5,916,608	$ 7,315,450
Sep-14	$ 7,071,849	$ 5,967,101	$ 7,002,669
Dec-14	$ 6,620,861	$ 5,430,697	$ 6,687,419
Mar-15	$ 6,468,745	$ 4,912,020	$ 6,493,706
Jun-15	$ 7,314,080	$ 5,758,574	$ 6,974,653
Sep-15	$ 7,267,623	$ 5,894,146	$ 6,738,831
Dec-15	$ 6,744,609	$ 5,366,453	$ 6,325,267
Mar-16	$ 6,720,368	$ 4,965,592	$ 5,681,892
Jun-16	$ 7,385,194	$ 5,719,040	$ 6,925,786
Sep-16	$ 7,137,041	$ 5,918,710	$ 7,453,971

Appendix 2 – Domestic Load Factors

Table 11: Domestic Load Factors (Source: Bureau of Transport Statistics)

Month-Year	Delta Air Lines	United Airlines	American Airlines
Jan-11	76.85	80.42	75.67
Feb-11	79.06	81.85	77.43
Mar-11	85.21	85.35	82.36
Apr-11	84.93	86.2	83.50
May-11	86.62	87.85	86.27
Jun-11	87.92	89.93	87.90
Jul-11	89.53	90.57	88.66
Aug-11	88.44	89.07	86.22
Sep-11	84.42	87.13	82.20
Oct-11	85.77	87.59	85.29
Nov-11	85.16	86.39	84.90
Dec-11	82.19	85.36	81.46
Jan-12	79.52	81.13	78.36
Feb-12	81.45	80.14	78.42
Mar-12	88.05	84.97	84.51
Apr-12	87.14	85.85	85.16
May-12	86.85	86.49	85.80
Jun-12	89.21	87.62	89.13
Jul-12	89.59	88.43	88.58
Aug-12	89	88.64	87.43
Sep-12	81.77	82.11	81.03
Oct-12	86.33	85.86	84.56
Nov-12	84.53	83.78	83.29
Dec-12	82.76	83.41	81.84
Jan-13	80.59	82.41	80.17
Feb-13	82.48	83.31	81.31
Mar-13	87.01	86.84	85.48
Apr-13	84.57	85.23	85.37
May-13	86.14	86.77	86.52
Jun-13	87.97	88.92	89.22
Jul-13	87.67	88.47	88.85
Aug-13	87.1	88.74	86.38

Month-Year	Delta Air Lines	United Airlines	American Airlines
Sep-13	82.39	83.58	80.58
Oct-13	83.68	84.41	84.08
Nov-13	80.18	82.24	80.56
Dec-13	86.32	88.01	84.86
Jan-14	82.22	83.97	80.78
Feb-14	84.74	84.32	82.67
Mar-14	87.96	86.99	85.46
Apr-14	87.69	87.12	86.52
May-14	88.51	87.74	87.61
Jun-14	89.28	88.6	89.01
Jul-14	90.11	88.38	89.24
Aug-14	88.67	89.17	87.89
Sep-14	84.5	83.72	82.25
Oct-14	86.7	83.99	84.84
Nov-14	83.82	82.21	80.67
Dec-14	85.24	85.8	81.96
Jan-15	81.17	83.15	79.66
Feb-15	84.86	83.83	83.24
Mar-15	88.56	86	84.70
Apr-15	87.22	86.06	84.50
May-15	87.9	86.41	85.42
Jun-15	89.82	87.76	88.92
Jul-15	89.61	88.97	89.93
Aug-15	87.96	88.56	88.69
Sep-15	86.05	85.39	85.71
Oct-15	89	87.16	88.45
Nov-15	86.92	85.4	85.27
Dec-15	86.07	85.59	84.83
Jan-16	83.11	83.67	82.41
Feb-16	82.29	81.55	81.40
Mar-16	87.02	85.04	85.61
Apr-16	86.37	84.43	84.70
May-16	87.73	86.52	86.10
Jun-16	88.64	89.47	88.19

Month-Year	Delta Air Lines	United Airlines	American Airlines
Jul-16	87.31	88.88	87.35
Aug-16	84.23	86.61	84.78
Sep-16	86.28	85	84.76
Oct-16	88.14	85.89	85.70